

Sept. 24, 1935.

H. E. HARKIN

2,015,220

CHOPPING BLOCK SCRAPER

Filed Aug. 25, 1934

2 Sheets-Sheet 1

Fig. I.

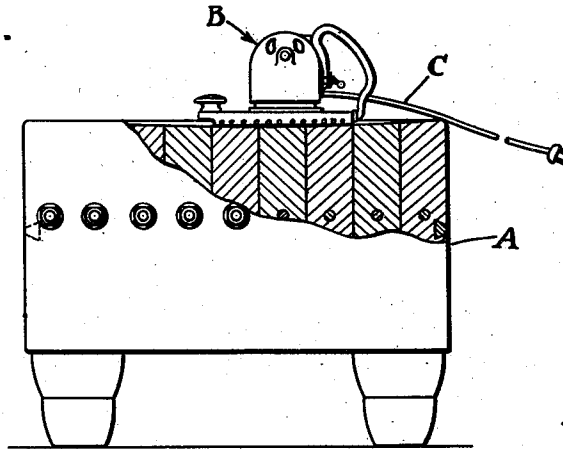


Fig. II.

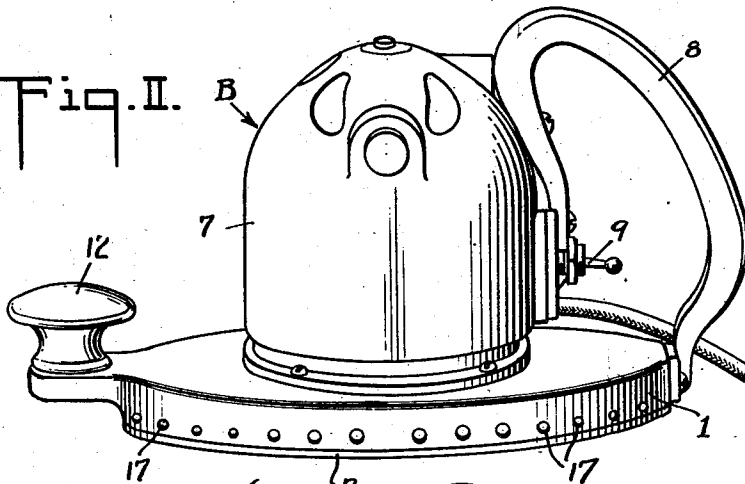
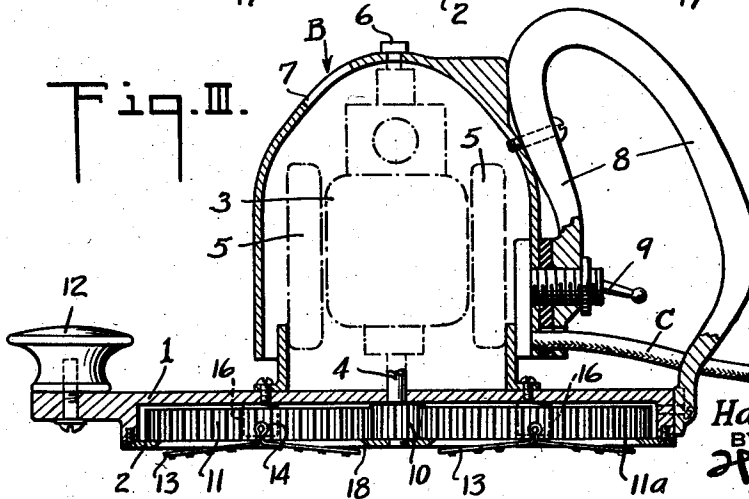


Fig. III.



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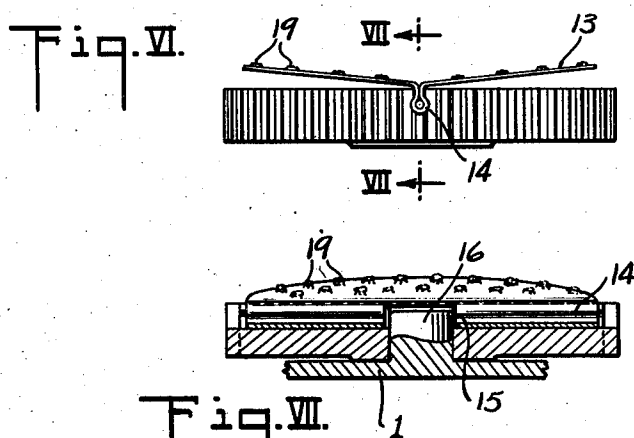
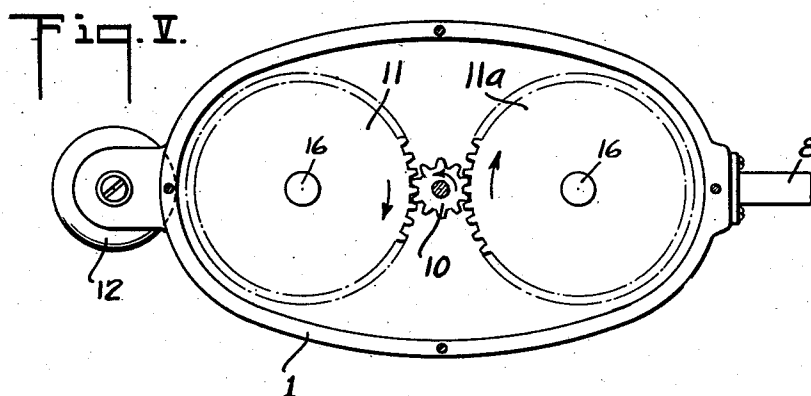
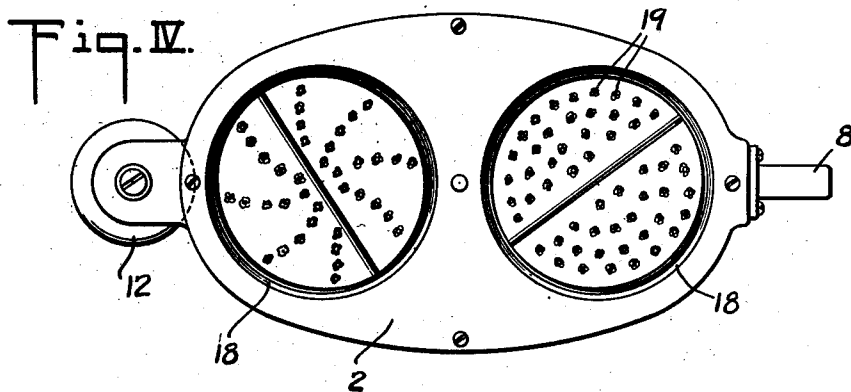
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CHOPPING BLOCK SCRAPER

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2 Sheets-Sheet 2



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CHOPPING BLOCK SCRAPER

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Application August 25, 1934, Serial No. 741,383

6 Claims. (Cl. 144—115)

This invention relates to a wood-working tool which can best be described as a scraper, for cutting the surface and more particularly irregular surfaces of an area of wood such as the top of a chopping block. While it may serve for various other purposes, among the objects of my invention are the production of a tool that can be easily handled and will economically dress any regular wood surface as the top of a chopping block, or other like surface where similar difficulties of treatment exist.

A butcher's chopping block is now usually made of a large number of heavy pieces of wood with their grain running vertically or irregular, but presenting a top surface, when all the pieces are doweled and bolted together, a generally level top. While the use of the block results in greater wear because of more frequent chopping on the middle portion, irregular cuts due to incidents in use, or due to slight variations in hardness at the protruding end of the different sections composing the block, result in irregularities which after a period of use require the dressing of the entire surface to bring it back to a generally smooth surface, although it may still have the desired slight general depression. Laborious scraping has heretofore been the rule of re-conditioning the surface, and after extended use special saws have been adapted to cut an entire horizontal section off the top, which involves considerable cost periodically.

My scraper involves special cutting surfaces driven at high speed with a multiplicity of slight cutting edges, but with flexibility to make the cutting tool effective on a concave or even a slightly irregular surface. It provides in particular that the operation of the tool can effect a cutting with any desired concavity of the top surface, but still finish the surface with all desired smoothness. Meeting all the requirements of peculiar shape and conditions and the character of the wood, which is usually a suitable grade of oak or maple, it provides a simple tool easily handled and economically operated for time-saving and convenient finishing by any one at odd times occupied in the shop.

While my invention may be embodied in a variety of forms and modifications may be made to suit particular conditions, I have in the accompanying drawings illustrated a particular form which has been made and successfully used with all the advantages hereinbefore mentioned.

The form of my invention shown in the accompanying drawings comprises:

Fig. I is a side elevation of a chopping block

part cut away, with a scraping tool positioned on the concave surface.

Fig. II is a side perspective view of the tool on a larger scale.

Fig. III is a vertical section of the tool.

Fig. IV is a bottom view of the tool base.

Fig. V is a bottom view of the base with the base cover plate removed showing the driving gear.

Fig. VI is a side view of one of the driving gears with the flexible disc scraper in upside down position.

Fig. VII is a section on line VII—VII of Fig. VI.

The chopping block A may be of any usual form, that illustrated being section or built-up chopping blocks now generally in use, with a series of sections of wood on end clamped together by bolts in one direction, doweled at the ends and with suitable legs. With a slightly concave top of the chopping block, the scraping tool B is adapted to be operated over the entire upper surface with a suitable current wire C connected with a socket, so as to supply current for the motor in the tool during its desired range of movement.

The tool B in the form shown, comprises a base 1 having a removable base-plate 2 and a motor armature 3, with a shaft 4 and fields 5, and a top pivot connection 6.

The entire motor mechanism is covered and protected by a casing 7, to which an arm or handle 8 is rigidly attached and the electrical connections C—C, and a suitable switch 9 for ready manipulation to turn on and off the current operating the tool.

The motor shaft 4 extends through the base 1 and drives gear 10, which meshes with gears 11, 11', which in this case have a ratio of about 6 to 1, so that with normal speed of a small motor the cutters or scraping discs may be turned at a most effective scraping speed.

The base 1 has a knob 12, so that an operator may manipulate the tool by grasping the handle 8 and the knob 12, and direct the tool and exert the desired balanced pressure on the cutters in the course of operation.

Having the two cutting discs symmetrically located on opposite sides of the motor shaft the main dead weight of the tool balances the tool and contributes to the ease of manipulation.

The cutting disc 13 has a crimped middle diametrical rib 14, which is cut away near its middle, with an incision 15 into which the stud pivot 16, attached to or formed with base 1, forming a suitably lubricated bearing for gears 11, 55

11*, projects in order to keep the disc centrally located on the gear. A recess diametrically across each gear accommodates the central rib on the cutting disc, which can therefore be slid from the side of the gear into its fixed contact or support, but with the central rib this support provides for the flexing or springing of each half of the cutting tool when the tool is pressed down upon the wood surface to be cut, dressed or scraped.

The cutting disc or tool is preferably a disc of thin sheet steel suitably tempered to maintain its initial or normal shape, which consists of a slight dihedral angle which positions each half away from the horizontal, and in the position of operative assembly these two sides or semi-circles of the disc bulge outwardly beyond the base-plate 2. The base preferably has a series of holes 17 above the base-plate 2, so that any dust or scrapings that might be picked up by the gears will by centrifugal force be thrown out to the side. In addition, however, the edges 18 of the holes or apertures in the bottom cover plate 2, are chamfered or beveled so that the dust or scrapings thrown out by rotation of the cutting discs will be driven laterally away from the tool to prevent their ingress to the mechanism.

The base, casing, handle and other parts are preferably made of aluminum, while the cutting discs or knives used in the tool would be made of steel or hard alloys, and after the punching of the holes 19, 19 in the discs I prefer to turn over the exuded edge of each perforation so as to provide an outwardly directed cutting edge for each of the perforations, and also to maintain the series of projections on the disc an equal height above the surface of the disc. This fashioning of the holes to form uniform cutting heads or prongs, I may, however, form with special tools in one operation to provide uniformity and suitable cutting edge for the purposes of such a high speed wood-cutting or scraping disc, without any particular sharpening after their formation. When the perforations have been completed the entire disc is suitably tempered and hardened, and thereupon becomes a suitable cutting tool and spring-held cutting disc, for the purposes herein described.

It will be noted, particularly from Figs. VI, VII, that when the gear with the disc is reversed, compared with the other figures, and the gear has been inserted in the casing 1, the discs spread sufficiently beyond the lower surface of the base cover 2 so that as the base of the tool is moved over a concave surface the cutting discs will reach into the arc of the depression of the concavity so as to effectively establish a cutting contact for all of the inequalities it is desired to remove.

It will thus be seen that in the form of my invention herein specifically described, a movable hand-controlled and manipulated base has cutting discs and means for revolving the same at high speed, for the purpose of scraping or cutting the irregular surface over which the tool is moved. The cutting discs have a large number of sharp rigid projections distributed throughout the surface of each disc which project just enough from but are integral with the flat surface of the disc in order to effect a slight and predetermined cutting of the surface. As a chopping block is slightly concave, the cutting discs are so constructed as to normally press away from the face of the tool, but they are yielding or spring-pressed in order that they ex-

ert the maximum cutting effect on the projecting irregularities of the surface, and thereby rapidly accomplish the desired result of producing on the entire surface to the desired smooth condition. The spring-pressed cutters project sufficiently so that between the two ends of the base they will effectively reach and scrape or dress uniformly all parts of a generally concave surface by extending sufficiently below the level or plane of the bottom of the base, and having the cutters symmetrically disposed with respect to the periphery of the bottom of the base, and more particularly equi-distant from the major dimension of the base of contact with the block.

As the cutters are easily made of spring sheet steel the perforations and projecting edges of the metal at each perforation form steel-hard cutting or scraping points or small cutters. By revolving the cutters at high speeds the cutting or scraping is effected and produces a uniform finished surface suitable for the purpose intended.

By the formation and arrangement of the cutters they can be readily renewed by pulling out the gear from its pivotal mounting, sliding the cutter rib diagonally of the gear, and on replacement of a new one, the return of the gear to its working position causes the pivoted stud to engage the middle of the rib of the cutter, and thereby hold it in central registration with the gear and with the aperture in the base of the tool.

By the chamfering or beveling of the periphery of the opening in the base of the tool the sawdust or wood particles cut away are immediately thrown out laterally in view of the high speed of the cutter, and prevent clogging up of the gears or cutter. This makes the cutters and the tool self-clearing and insures uniformity of operation and durability.

While a suitable motor is shown mounted on the tool, the weight in view of the small size of the motor is practical for all operations, and also lends sufficient weight to the tool to maintain a proper degree of uniform pressure to which the hand pressure may be added to cause suitable flexing of the cutting discs. The motor connections through suitable lead wires adapt the tool for operation by plugging in the wire at any convenient nearby socket, thus permitting all the range of operation necessary for the use of the tool.

While I have shown one article with two cutting discs, and a particular arrangement for motor and gears and replaceable cutters, and this construction has proven fully effective, convenient and economical, many variations may be made without departing from the spirit of my invention. While a specific useful purpose has been cited as the primary object of my design and construction, many other uses may be found for the tool in its various forms, and without confining myself to the particular article herein illustrated in the accompanying drawings and described, what I claim and desire to secure by Letters Patent is:

1. A dressing or scraping tool of the class described, having a cutting disc with integral sharp cutting prongs uniformly projecting from one side thereof, a diametrical ridge on the back side of the disc, a rotating member for attachment to said disc containing means cooperating with the ridge on the disc so constructed and arranged that upon assembly for operation, the cutting disc is locked in operative position, and

after operation permitting ready removal for replacement or repair.

2. A dressing or scraping tool for wood surfaces having a base carrying a motor and driving means to a rotating member adjacent the operating working face of the base, a cutter disc adapted to be removably attached to said rotating member, a diametrical fold in said disc so formed and arranged that two sides of the disc are normally spring-held at a slight angle offset to the plane of the disc, whereby the two sides of the disc project beyond the plane of the base normally but permit spring recession during operation to meet the conditions of irregular cutting of the surface being dressed.

3. A cutting disc for wood surface dressing or scraping tool, consisting of a disc having integral cutting prongs or heads uniformly projecting from a flat surface of one side of the disc, a diametrical fold in the disc so formed and constructed as to provide an initial slight dihedral angle between the two halves of the disc, and said fold constituting a spring support between said two halves whereby pressure on the tool will vary the relation of the two halves of the disc, for the purpose described.

4. A cutting disc for wood surface dressing or scraping, consisting of a disc having integral cutting projections substantially uniform from one side, diametrically disposed means on the other side of the disc adapted to spring-hold the two halves of the disc for varying angular relation upon operating pressure, and simultaneously constituting a means of operating support

of the disc on and driving from a rotating member of a scraping tool.

5. A tool adapted for dressing or scraping a concavely irregular wood surface, comprising a mobile base with handles for balanced manipulation, a motor and other driving mechanism comprising the principal dead weight disposed intermediate the handles, a recess on the underside of the base, a plurality of gears in said recess and connections therefrom to the superposed motor, a detachable face plate adapted to hold said gears in position in the recess, a hole in said plate opposite each gear and a rotating scraping disc with integral cutting prongs having inherent flexibility mounted in said recess and attached to the adjacent gear.

6. A tool for dressing an irregular wood surface with concavities, comprising a manually operable base fixedly supporting a motor and cutter driving mechanism, having a rotarily driven member supported in fixed position with respect to the working contact face of the base and for rotation in a plane parallel to the working face of the base, a cutter disc having means adapted for attachment to said rotatable member, fixed cutting prongs integral with said disc uniformly projecting slightly beyond the cutting side of the disc, said cutter disc having two halves each set normally at a slight angle to the plane of rotation, spring means associated with said two halves of the disc whereby the angularity of the two halves will approach a common plane of rotation when the tool is pressed for operation in the dressing of the wood surface.

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